

Borehole

**40-10-06****Log Event A****Borehole Information**

Farm : <u>S</u>	Tank : <u>S-110</u>	Site Number : <u>299-W23-169</u>
N-Coord : <u>35,874</u>	W-Coord : <u>75,665</u>	TOC Elevation : <u>665.30</u>
Water Level, ft :	Date Drilled : <u>11/30/1971</u>	

**Casing Record**

Type : <u>Steel-welded</u>	Thickness, in. : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>145</u>	

**Borehole Notes:**

This borehole was drilled to a depth of 100 ft in November 1971 and deepened to 145 ft in May 1973. The length of this borehole was completed with 6-in. diameter casing. The drilling report does not indicate if the borehole casing was perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately flush with the tank farm grade.

**Equipment Information**

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

**Log Run Information**

Log Run Number : <u>1</u>	Log Run Date : <u>07/03/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>56.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>07/03/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>55.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>81.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>3</u>	Log Run Date : <u>07/08/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>144.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>134.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole  
Log Data Report

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Log Event A

Log Run Number :	<u>4</u>	Log Run Date :	<u>07/08/1996</u>	Logging Engineer:	<u>Alan Pearson</u>
Start Depth, ft.:	<u>135.5</u>	Counting Time, sec.:	<u>100</u>	L/R : <u>L</u>	Shield : <u>N</u>
Finish Depth, ft. :	<u>80.0</u>	MSA Interval, ft. :	<u>0.5</u>	Log Speed, ft/min.:	<u>n/a</u>

### Analysis Information

Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787

Analysis Date : 04/10/1997

#### Analysis Notes :

This borehole was logged by the SGLS in four log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclide Cs-137 was detected in this borehole. Measurable Cs-137 contamination was detected continuously from the ground surface to 38.5 ft, from 47.5 to 49 ft, and intermittently from 137 ft to the bottom of the logged interval (144 ft).

The KUT plots show a decrease in the U-238 and Th-232 concentration values at a depth of 48 ft. The K-40 concentration values increase significantly at about 55 ft. A peak in the U-238 and Th-232 concentration values was detected at about 119 ft. The U-238 concentration values increase between 121 and 143 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank S-110.

#### Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.